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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/719,118	02/28/2001	Thomas Schulte	10191/1566	5238

26646 7590 07/01/2003

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EXAMINER

DICUS, TAMRA

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 07/01/2003

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/719,118

Applicant(s)

SCHULTE ET AL.

Examiner

Tamra L. Dicus

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

The 112 rejection is withdrawn since Applicant amended the claims.

Claim Rejections – 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 14-19 and 22-24 are rejected under 35 U.S.C. 103(a) as being obvious over USPN 4,659,960 to Toya et al. in view of USPN 4,832,988 to Bogenschutz et al. and USPN 6,076,965 to Rosen et al.

Toya discloses various embodiments of a spark plug (temperature sensor) and making the plug comprising an electrode element (carrier) of a metal oxide, carbide, or nitride powders, (such as zirconia, silicon nitride, or titanium carbide) coated with a noble metal, where an electrode axis (conductor track) of nickel or precious metals such as platinum covers the surface of the electrode element embedded in a laminated structure (see col. 2, line 46 – col. 3, line 6; Figures and patented claims). The process utilized may employ various coating techniques including chemical and physical vapor deposition processes (see col. 3, lines 7-35; col. 3, lines 65+; col. 4, lines 25+).

Toya does not teach thermal treating a carrier and its causes (claims 22 and 23).

However, Bogenschutz teaches a process for chemically metallizing an inorganic substrate,

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explaining ceramic or glass materials are used as assembly elements, carrier elements or in the form of layers in the semiconductor art. Examples of materials for these applications are silicon nitride, silicon oxide nitride, as well as carbidic layers. In order to be functional in these electrical or electronic applications, these materials or layers must be metallized for the production of conductive paths and conductive terminals. Metallization is generally accomplished with copper or a copper alloy, since copper meets the requirements particularly well with respect to electrical conductivity, ductility, and solderability. Further, copper and copper alloys can be deposited in an electroless, i.e., a currentless chemical manner and can be then electrolytically reinforced using the layer deposited chemically as an electrode. See col. 1, lines 16-50. In the abstract, Bogenschutz further explains how thermal treatment can increase adhesion. See also col. 4, lines 20-28 explaining further, a thermal treatment before, during and/or after at least one of the process steps has been found to be necessary in order to reinforce and/or accelerate the formation of chemical bonds, such as by mechanisms including diffusion and/or transportation. Hence, it would have been obvious to one of ordinary skill in the art to modify the plug of Toya to include thermal treating and its inherent causes because Bogenschutz teaches carriers after electroless deposition can be thermally treated to reinforce adhesion as cited above.

Toya does not teach an evaluation device. However, Rosen teaches a monocrystal of nickel cobalt-manganese oxide and method of a sensor formed where an evaluation device (an electrical resistance measuring device 110 is connected to the sensing element (temperature sensor) via leads 106 (conductor tracks), made of the aforementioned metal oxide. See col. 7, lines 14-49 and Figure 4, depicting the leads to measure resistance as claimed in claim 14.

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Further meeting claim 24, in regards to the "loading the at least one conductor track with an alternating current voltage", Rosen teaches at col. 7, lines 35-45, a circuit can be used to measure unknown temperature, which inherently provides alternating current. Hence, it would have been obvious to one of ordinary skill in the art to modify the spark plug of Toya to include an evaluation device since Rosen teaches sensing elements connected to electrical resistance measuring devices for the purpose of providing connections in series as taught by Rosen at col. 7, lines 14-49. Also it would have been obvious to one of ordinary skill in the art to provide loading to a conductor track since Rosen teaches at col. 7, lines 34-45 using a circuit to provide the loading in order to measure unknown temperatures via resistance the circuit provides.

3. Claims 14 and 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,659,960 to Toya et al. in view of USPN 6,076,965 to Rosen et al. and further in view of USPN 4,387,258 to Vadekar et al.

4. As provided above, Toya in view of Rosen essentially teaches the claimed invention.

Toya does not disclose the way in which palladium is deposited as recited in instant claims 20 and 21. However, Vadekar teaches selective hydrogenation using palladium on crystalline silica teaching it is known to provide a substrate with deposited palladium (inclusive of palladium nuclei) at col. 3, lines 34-68 via vapor or gas phase deposition, and reduction (initially deposited by reduction) because palladium crystallites (palladium used as seed crystals for deposition, claim 22) have excellent results from metal surface area measurements as the crystallite disperses well with metal. Hence, it would have been obvious to one of ordinary skill in the art to modify the sensor of Toya to further include palladium or their seeds for the purpose of

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providing have excellent results from metal surface area measurements as the crystallite disperses well with metal as taught by Vadekar at col. 3, lines 34-68.

Response to Arguments

The prior art of Toya is still relied upon because they essentially teach the claimed invention.

The secondary references are used to provide obviousness to include an evaluation device and all other claims depending from independent claim 14.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tamra L. Dicus whose telephone number is (703) 305-3809. The examiner can normally be reached on Monday-Friday, 7:00-4:30 p.m., alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on (703) 308-0449. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-8329 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Tamra L. Dicus
Examiner
Art Unit 1774

June 26, 2003

CYNTHIA H. KELLY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700

